

# LOW-TEMPERATURE GROWN HIGH QUALITY ULTRA-THIN $\text{CoTiO}_3$ GATE DIELECTRICS

## ABSTRACT

A gate oxide and method of fabricating a gate oxide that produces a more reliable and thinner equivalent oxide thickness than conventional  $\text{SiO}_2$  gate oxides are provided. Gate oxides formed from alloys such as cobalt-titanium are thermodynamically stable such that the gate oxides formed will have minimal reactions with a silicon substrate or  
5 other structures during any later high temperature processing stages. The process shown is performed at lower temperatures than the prior art, which inhibits unwanted species migration and unwanted reactions with the silicon substrate or other structures. Using a thermal evaporation technique to deposit the layer to be oxidized, the underlying  
10 substrate surface smoothness is preserved, thus providing improved and more consistent electrical properties in the resulting gate oxide.

"Express Mail" mailing label number: EL873858896US

Date of Deposit: December 20, 2001

This paper or fee is being deposited on the date indicated above with the United States Postal Service pursuant to 37 CFR 1.10, and is addressed to the Commissioner for Patents, Box Patent Application, Washington, D.C. 20231.